

20030127157

USE AND CARE OF THE
EXTENDED COLD WEATHER
CLOTHING SYSTEM
(ECWCS)

(2)

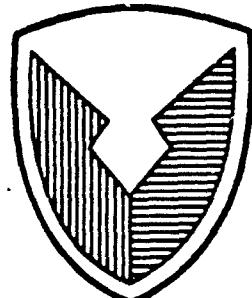
DTIC FILE COPY

AD-A187 998



This document has been approved
for public release and sale; its
distribution is unlimited.

DTIC
S ELECTED NOV 16 1987
D
H



PM 10 00 128

U.S. ARMY NATICK R, D & E CENTER
NATICK, MASSACHUSETTS 01760-5011

The US Army Natick Research, Development and Engineering Center is the ECWCS materiel developer and proponent for this publication. Recommended changes and comments for its improvement will be appreciated. Prepare comments and recommended changes on DA Form 2028 and forward to:

DEPARTMENT OF THE ARMY
US Army Natick Research,
Development and
Engineering Center
Natick, MA 01760-5011

Accession For	
NTIS GRA&I	<input checked="" type="checkbox"/>
DTIC TAB	<input type="checkbox"/>
Unannounced	<input type="checkbox"/>
Justification	
By <u>per Selection</u>	
Distribution/	
Availability Codes	
1st	Avail and/or Special
A-1	



RE: Distribution Statement
Approved for Public Release. Distribution
Unlimited.
Per Ms. Bremner, USARDEC/STRNC/ML

FOREWORD

- o The Extended Cold Weather Clothing System (ECWCS) is a layered insulating system adjustable to personal preference, metabolism, and prevailing weather conditions.
- o The system is designed to maintain adequate environmental protection between +40°F and -60°F (4°C and -51°C).
- o The ECWCS system uses moisture management principles to transfer perspiration away from your skin so you will remain dry and warm. Under certain conditions such as high work activity followed by inactivity, the use of wool or wool/cotton clothing items with ECWCS will reduce the level of environmental protection provided by ECWCS. In cold, wet and arctic environments it is recommended that you use only clothing items listed in Appendix A. It is especially recommended that you not use any items which are made with wool or wool blends.
- o ECWCS is not cumbersome in weight and bulk; the total system weighs approximately 18 pounds.
- o ECWCS is easy to maintain both in field and garrison environments if... the special use and care instructions are carefully followed due to the unique characteristics of the state-of-the-art material.

TABLE OF CONTENTS

Section I: INTRODUCTION	10
A. PURPOSE	10
B. SCOPE	10
Section II: ITEM DESCRIPTION OF ECWCS	11
A. GENERAL	11
B. CLOTHING ITEMS	11
1. Undershirt, Cold Weather, Polypropylene and Drawers, Cold Weather, Polypropylene	11
a. Materials Used	11
b. Concept of Use	11
c. Description of Item	11
2. Shirt, Cold Weather, Polyester Fiberpile	13
a. Materials Used	13
b. Concept of Use	13
c. Description of Item	13
3. Overall, Bib, Cold Weather, Fiberpile	13
a. Materials Used	13
b. Concept of Use	13
c. Description of Item	13
4. Liner, Cold Weather, Trousers, Field and Liner, Cold Weather, Coat, Men's	15

a. Materials Used	15
b. Concept of Use	15
c. Description of Item	15
5. Trousers, Cold Weather, Field, Nylon and Cotton	15
a. Materials Used	15
b. Concept of Use	15
c. Description of Item	15
6. Parka, Extended Cold Weather, Camouflage	17
a. Materials Used	17
b. Concept of Use	17
c. Description of Item	17
7. Trousers, Extended Cold Weather, Camouflage	17
a. Materials Used	17
b. Concept of Use	17
c. Description of Item	19
8. Parka, Snow Camouflage and and Trousers, Snow Camouflage	19
a. Materials Used	19
b. Concept of Use	19
c. Description of Item	19
C. HANDWEAR	19
1. Gloves, Insert, Cold Weather	19

a. Materials Used	19
b. Concept of Use	21
c. Description of Item	21
2. Gloves, Men's and Women's, Light Duty	21
a. Materials Used	21
b. Concept of Use	21
c. Description of Item	22
3. Mitten Inserts, Cold Weather (Trigger Finger)	23
a. Materials Used	23
b. Concept of Use	23
c. Description of Item	23
4. Mitten Shells, Cold Weather (Trigger Finger)	23
a. Materials Used	23
b. Concept of Use	23
c. Description of Item	23
5. Mitten Set, Extreme Cold Weather	25
a. Materials Used	25
b. Concept of Use	25
c. Description of Item	25
6. Mitten Shells, Snow Camouflage, Cotton, White, Two Finger	25
a. Materials Used	25
b. Concept of Use	27
c. Description of Item	27

D. HEADWEAR	27
1. Cap, Camouflage Pattern	27
a. Materials Used	27
b. Concept of Use	27
c. Description of Item	27
2. Hood, Combat Vehicle Crewman's (Balaclava)	27
a. Materials Used	27
b. Concept of Use	29
c. Description of Item	29
E. FOOTWEAR	29
1. Socks, Men's, Nylon, Cushion Sole, Stretch Type, OG-106	29
a. Materials Used	29
b. Concept of Use	29
c. Description of Item	29
2. Boots, Cold Weather (Type I-Black)	31
a. Materials Used	31
b. Concept of Use	31
c. Description of Item	31
3. Boots, Extreme Cold Weather (Type II-White)	31
a. Materials Used	31
b. Concept of Use	31
c. Description of Item	31

F. ACCESSORIES	33
1. Suspenders, Trousers, M-1950	33
a. Materials Used	33
b. Concept of Use	33
c. Description of Item	33
Section III: USE AND CARE OF ECWCS	35
A. DONNING AND DOFFING PROCEDURES	36
1. Sequence	36
2. Adjustments	36
B. INSPECTION	37
C. STORAGE	37
D. ATTACHING RANK INSIGNIAS	38
E. CLEANING	39
1. General	39
2. Polypropylene Underwear, Polyester Fiberpile Shirt and Bib Overall	39
a. Machine/Hand Laundering	39
b. Drying	39
3. Liners, Coat and Trousers	39
a. Machine/Hand Laundering	39
b. Drying	40
4. Trousers, Cold Weather, Field	40

a. Machine/Hand Laundering	40
b. Drying	40
5. Parka/Trousers, Extended Cold Weather, Camouflage	40
a. Machine/Hand Laundering	40
b. Drying	40
6. Parka/Trousers, Snow Camouflage	41
7. Handwear	41
a. Gloves, Insert, Cold Weather	41
b. Gloves, Men's and Women's Light Duty	41
c. Mitten Inserts and Shells	41
d. Mitten Set	41
8. Headwear (Hood (Balaclava) and Cap, Camouflage Pattern)	41
a. Machine/Hand Laundering	41
b. Drying	41
9. Footwear	43
10. Accessories	42
F. STAIN/SPOT REMOVAL	42
G. WATER REPELLENCY	43
Section IV: REPAIR OF ECWCS	44
A. RIPS AND TEARS	44

1. Underwear, Bib Overall, Polyester Shirt, Liners (Coat and Trousers), and Parka/Trousers (Snow Camouflage)	44
2. Parka/Trousers, Extended Cold Weather, Camouflage	45
a. Field expedient or temporary measures	45
b. Permanent repairs	45
B. DRAWCORDS	46
C. ZIPPERS	47
D. MAINTENANCE TURN IN	47
APPENDIX A. DESCRIPTIVE DATA FOR THE ECWCS	48
APPENDIX B. REFERENCES	53
APPENDIX C. SIZE CHART	54

Section I: INTRODUCTION

A. PURPOSE. This pamphlet was prepared to help **you** understand the use, care, and maintenance of the ECWCS.

B. SCOPE. The pamphlet includes item descriptions of each garment in the system, general use and care instructions, general repair procedures, and descriptive/reference data for the ECWCS.

Section II: SYSTEM DESCRIPTION OF ECWCS

A. GENERAL. The ECWCS is composed of 23 individual clothing, handwear, headwear and footwear items which are used in various combinations to meet cold weather environmental requirements. Appendix A (pages 48 to 52) lists ECWCS component items in layering order and identifies available sizes and the prescribed temperature range for each item.

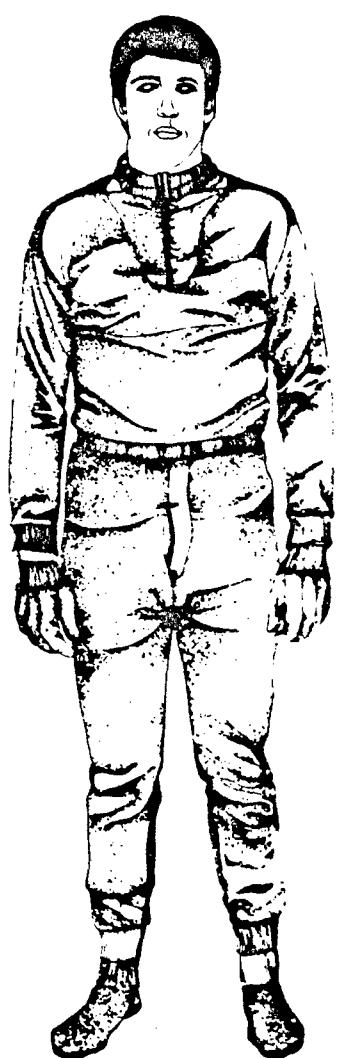
B. CLOTHING ITEMS.

1. Undershirt, Cold Weather, Polypropylene and Drawers, Cold Weather, Polypropylene. The cold weather underwear, which consists of the undershirt and drawers, are new ECWCS development items.

a. Materials Used. The underwear is made of knitted, brushed, multifilament polypropylene.

b. Concept of Use. The underwear layer next to the skin acts as a moisture wicking layer and serves to draw moisture away from the skin, transferring it to the outer layers of the system.

c. Description of Item. The undershirt is a brown-colored turtleneck that has a center front zipper which extends to the middle of the chest area. The zipper allows for ventilation at the neck and chest area. The drawers, also brown-colored, serve as a base layer to protect the lower extremities.



**Undershirt and Drawers,
Cold Weather, Polypropylene.**

2. Shirt, Cold Weather, Polyester Fiberpile. The cold weather shirt is a new ECWCS development item.

a. Materials Used. The material used for the shirt is a knitted, polyester fiberpile.

b. Concept of Use. The polyester fiberpile shirt serves as the primary insulating layer on the upper body.

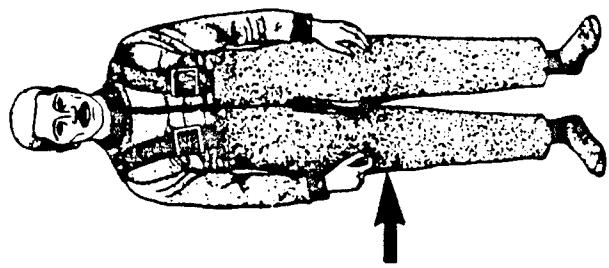
c. Description of Item. The shirt is brown-colored, has reinforced shoulder and elbow patches, a convertible turtleneck collar, front zipper, elastic drawcord waist, hook and pile cuff tabs, two chest cargo style pockets, and two lower handwarmer pockets.

3. Overall, Bib, Cold Weather, Fiberpile. The bib overall is a new ECWCS development item.

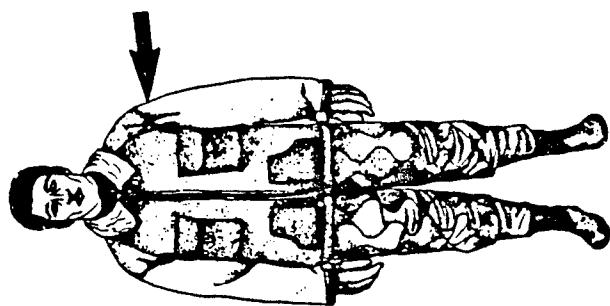
a. Materials Used. The material used for the bib overall is a knitted polyester fiberpile.

b. Concept of Use. The bib overall is used as an additional layer for temperatures below -25°F (-32°C) and down to -60°F (-51°C).

c. Description of Item. The overall is brown-colored, has elastic suspenders with quick release buckles, and full length zippers at the side seams. The quick release buckles are worn in front as shown on page 14.



Overall, Bib,
Cold Weather, Fibertile.



Shirt, Cold Weather,
Polyester Fibertile.

4. Liner, Cold Weather, Trousers, Field and Liner, Cold Weather, Coat, Men's. The full closure, cold weather trouser liner and the coat liner are standard items used in ECWCS.

a. Materials Used. The trouser and coat liners are quilted and made of polyester batting and ripstop nylon.

b. Concept of Use. The coat and trouser liners serve as an insulating layer for the ECWCS.

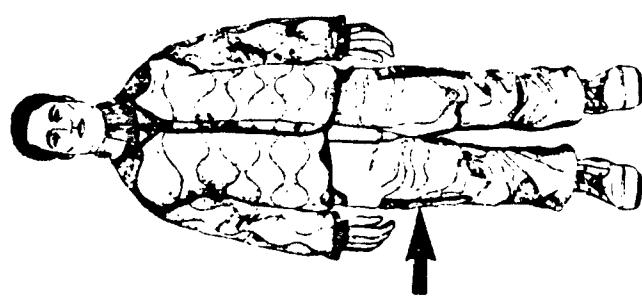
c. Description of Item. The standard coat and trouser liners have been redesigned to make these items capable of being worn independently of their respective outer garment. Buttons and buttonholes have been added to the coat front and the outseams of the trousers.

5. Trousers, Cold Weather, Field, Nylon and Cotton. The olive green or the four color camouflage printed cold weather field trousers are standard items used in ECWCS.

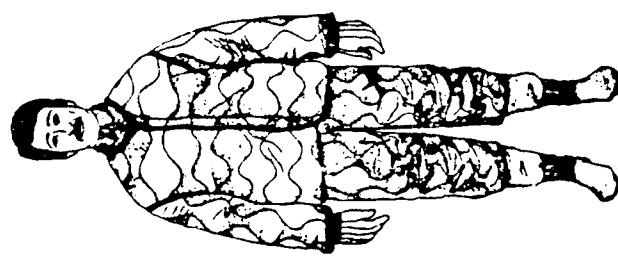
a. Materials Used. The trousers are made of nylon, cotton, wind resistant fabric.

b. Concept of Use. The field trousers serve as a durable insulating layer to be worn over the liners when the outer extended cold weather trouser shown on page 18 is not needed.

c. Description of Item. Characteristics of the field trousers are side hanging pockets, hip pockets,



Trousers, Cold Weather, Field,
Nylon and Cotton.



Liners, Cold Weather, Trousers,
Field and Coat, Men's.

cargo pockets, drawcords at the trouser bottoms, and adjustable waist straps.

6. Parka, Extended Cold Weather, Camouflage. the extended cold weather camouflage parka is a new ECWCS development item.

a. Materials Used. The parka is a three layer nylon and polytetrafluoroethylene (PTFE) laminate material.

b. Concept of Use. The parka serves as part of the windproof, waterproof layer in the system. The PTFE in the garment has the property to repel water while allowing perspiration to be expelled.

c. Description of Item. The parka has an integral hood, two breast inside map pockets (which can be opened without unzipping the parka), two large lower cargo pockets, and a two-way, full-front zipper to provide full face protection, leaving only the eyes uncovered. There is an elastic drawcord at the hem, hook and pile closures at the wrist tabs, underarm ventilation, and a rank tab at center chest.

7. Trousers, Extended Cold Weather, Camouflage. The extended cold weather camouflage trousers are a new ECWCS development item.

a. Materials Used. The trousers are also made of three layer nylon and PTFE laminate material.

b. Concept of Use. The trousers serve as part of the windproof, waterproof layer in the system.



**Parka, Extended Cold Weather, Camouflage;
Trousers, Extended Cold Weather, Camouflage.**

The PTFE in the garment has the property to repel water while allowing perspiration to be expelled.

c. Description of Item. The trousers have seat and knee patches, pass-through pockets, and inserts in the seams of the leg openings to allow easy donning and doffing without removing the boots.

8. Parka, Snow Camouflage and Trousers, Snow Camouflage. The snow camouflage parka and trousers are standard items used in ECWCS.

a. Materials Used. The overwhite parka and trousers are made of a cotton and nylon blend.

b. Concept of Use. The overwhite parka and trousers are used as a **camouflage outer layer in snow terrain** and are **not a substitute outer garment**. It is worn over the ECWCS parka and trousers outfit.

c. Description of Item. The hooded white parka has drawstrings for adjustment at the waist skirt and around the face. The trousers have a waist drawcord, side pockets, a hip pocket, knee pleats, and drawstrings at the ankles of the trouser liner. The parka and trousers, snow camouflage, are to be worn together for a complete body camouflage in snow terrain.

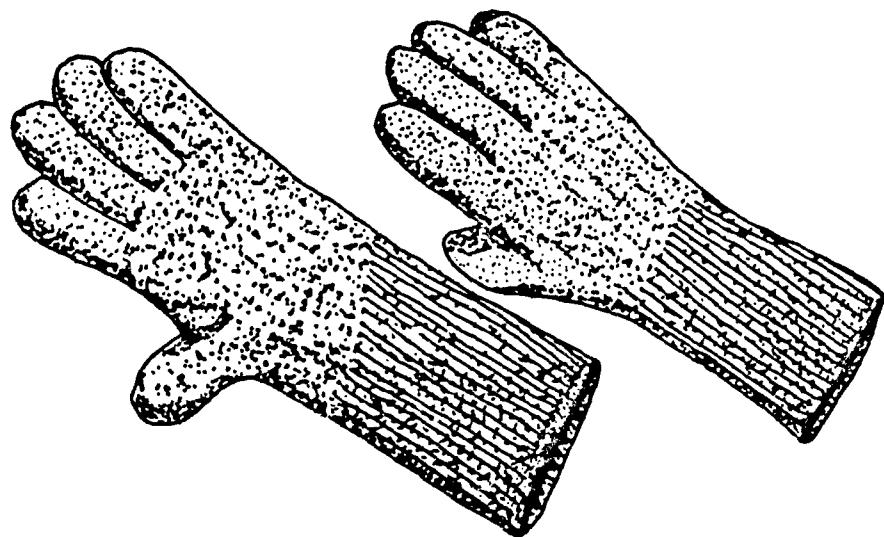
C. HANDWEAR. The ECWCS standard handwear items are: glove inserts, gloves, mitten inserts, mitten shells (cold weather and snow camouflage), and mitten set.

1. Gloves, Insert, Cold Weather.

a. Materials Used. The glove inserts are made of a blend of wool/nylon yarn.



**Parka, Snow Camouflage;
Trousers, Snow Camouflage.**



Gloves, Insert, Cold Weather.

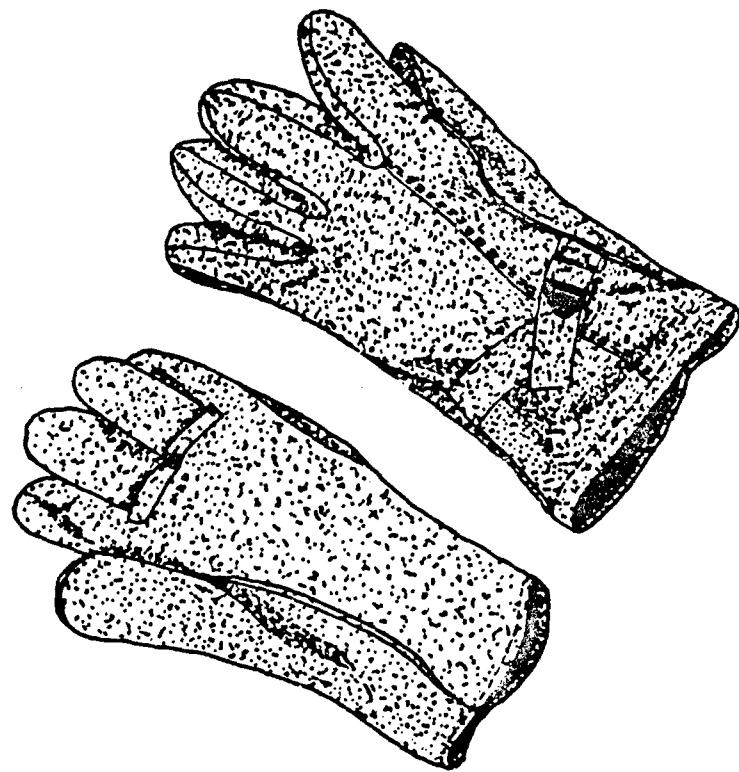
b. Concept of Use. The glove inserts are to be worn for added warmth with light duty gloves.

c. Description of Item. The olive drab glove inserts can be worn on either hand. All parts of the glove, except the cuff, are seamless knit. The cuff is a true rib knit.

2. Gloves, Men's and Women's, Light Duty.

a. Materials Used. The gloves are made of full grain, chrome tanned leather. The leather is treated with a water resistant compound.

b. Concept of Use. The gloves are used for light work duty. They may be worn alone or, for additional warmth in cold conditions, may be worn with the cold weather glove inserts.



Gloves, Men's and Women's, Light Duty.

c. Description of Use. The gloves are black, slip-on style, all leather, with a buckle strap of black tape on back of glove for wrist closure. The gloves are either a one-piece back and front or a two-piece back design.

3. Mitten Inserts, Cold Weather (Trigger Finger).

a. Materials Used. The yarn is a wool and nylon blend.

b. Concept of Use. The mitten inserts are used as an insulating layer under cold weather mitten shell shown on page 24.

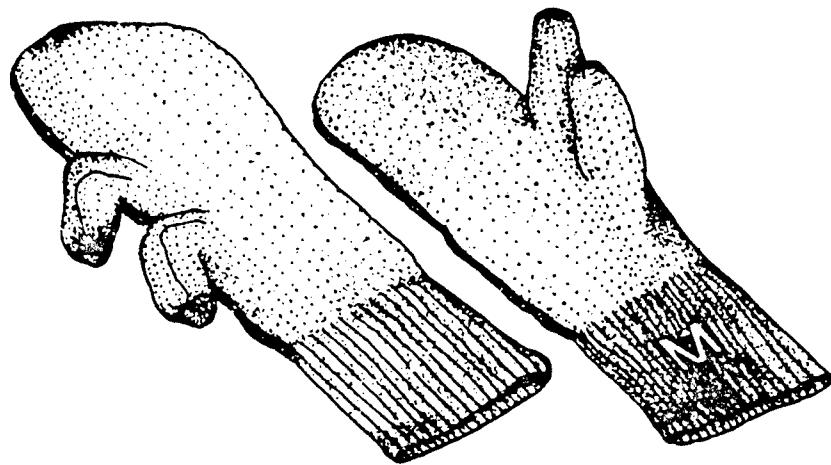
c. Description of Item. The mitten inserts can be worn on either hand and have separate sections for the thumb and index finger.

4. Mitten Shells, Cold Weather (Trigger Finger).

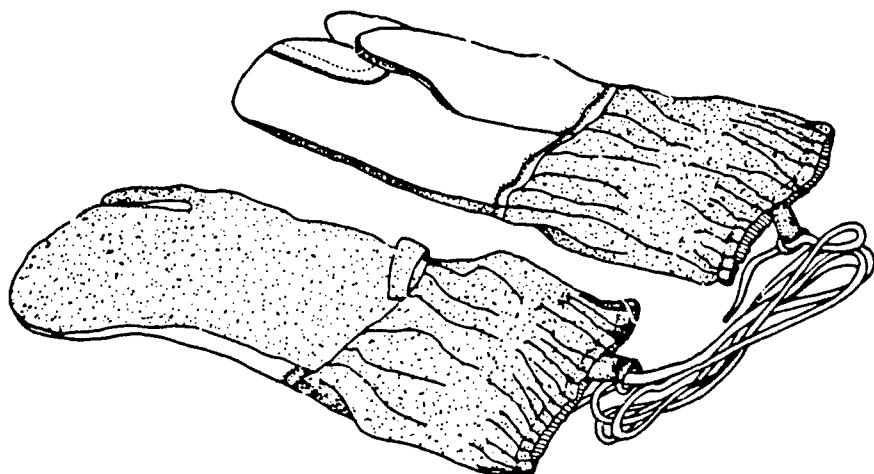
a. Materials Used. The leather on the palm is deerskin. The fabric on the back of hand, fingers, thumb, and front and back of mitten is wind-resistant, water-repellent cotton and nylon. The insulating material for the back of thumb, hand, and trigger finger, down to the cuff of the mitten, is polyester batting.

b. Concept of Use. The trigger finger mittens are to be worn with or without the wool/nylon mitten inserts and in areas too cold for leather gloves and not sufficiently cold for artic mittens.

c. Description of Item. The color of the leather is saddle brown. The mittens are slip-on style with trigger finger. The mitten has an elastic webbing and tape loop (for suspension cord) at the cuff opening and an adjustable wrist strap on the back of the mitten shell. The back of the thumb, hand, and trigger finger down to the cuff of the mitten is lined with insulation for added protection.



**Mitten Inserts, Cold Weather
(Trigger Finger).**



**Mitten Shells, Cold Weather
(Trigger Finger).**

5. Mitten Set, Extreme Cold Weather.

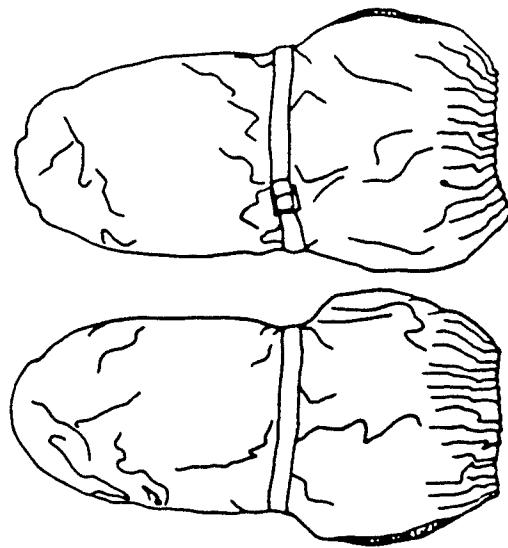
a. **Materials Used.** Deerskin leather is used on the palm side walls and front of thumb. The outer fabric for the mitten shell is a cotton and nylon wind-resistant, water-repellent sateen. The cloth outer piece is a 100% wool knitted pile fabric. The insulating material is a polyester batting.

b. **Concept of Use.** The mitten set is worn over the wool mitten insert and trigger finger mitten shells to provide environmental protection to the hands in cold environments. The suspension harness is worn over the camouflage parka. The cord is placed around the neck and the strap is adjusted to lay on the chest to keep the cord in place. The ends of the cord are tied to the loop on the outer shell of each mitten. The outer shell of the mitten set can be separated from the insulating liner for drying.

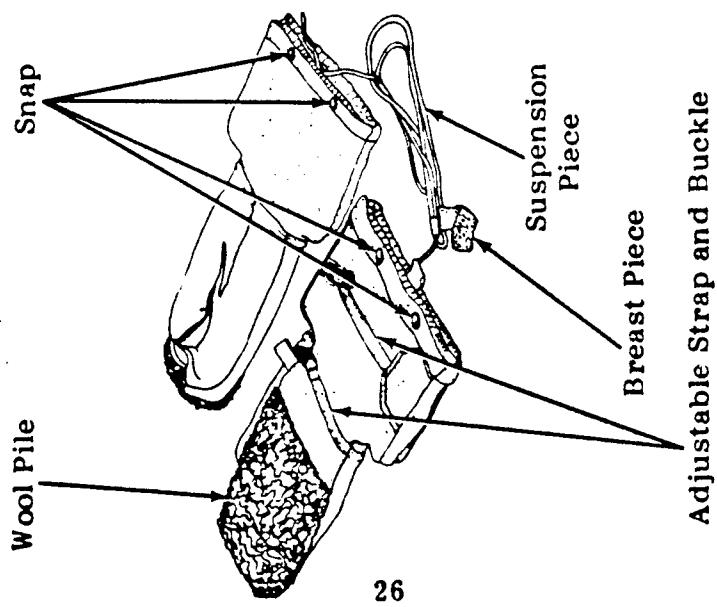
c. **Description of Item.** The mitten set consists of a shell with removable liner and a suspension harness. The palm and front of thumb of the shell is leather. The remainder of the mitten is fabric. The back of mitten shell includes a wool pile material used for warming the face. Two adjustable straps and buckles are included at back of mitten. The liner is attached to the shell by four snaps. The harness includes a suspension piece (cord) and a breast piece (strap).

6. Mitten Shells, Snow Camouflage, Cotton, White, Two Finger.

a. **Materials Used.** The fabric used for the snow camouflage mitten shells is a cotton and nylon blend.



Mitten Shells, Snow Camouflage.



Mitten Set, Extreme Cold Weather.

b. Concept of Use. The mitten shells are used as the handwear camouflage cover when worn over the mitten shells, cold weather, and mitten set, extreme cold weather, in snow environments.

c. Description of Item. The mitten shells have an adjustable strap on the back across the wrist and an elastic take-up at the hem of the mitten opening. The thumb side has an opening for the trigger finger.

D. HEADWEAR. There are two headwear items in the ECWCS: the cap, combat, camouflage with earflaps and the balaclava (hood).

1. Cap, Camouflage Pattern.

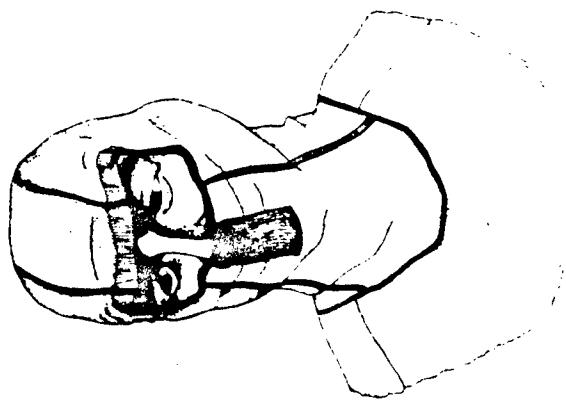
a. Materials Used. The cap is a cotton and nylon blend. The earflap lining is made of wool and nylon flannel.

b. Concept of Use. The cap is intended for use in field and garrison environments found in various climate zones.

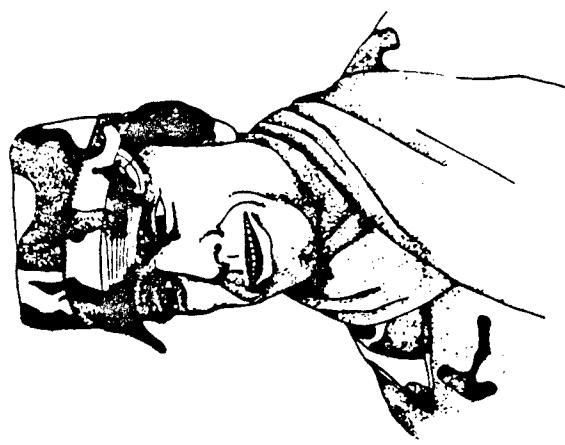
c. Description of Item. The visor style cap has a circular top crown and retractable earflaps. It is self-lined except for the flannel-lined earflaps. The cap has a woodland camouflage pattern and the earflap lining is olive green.

2. Hood, Combat Vehicle Crewman's (Balaclava).

a. Materials Used. The hood is made of NOMEX™ bi-ply knit, Pajama-Check NOMEX™ laminated to PTFE film, and NOMEX™ rib knit with double covered SPANDEX™ yarn.



Hood, Combat Vehicle
Crewman's (Balaclava).



Cap, Camouflage Pattern.

b. Concept of Use. The balaclava (hood) is intended to provide the soldier environmental protection from cold and wind. It is worn with the parka, extended cold weather, and under the M-1 or PASGT helmet.

c. Description of Item. The balaclava (hood) is composed of a knit comfort layer worn closest to the skin as well as a knit outer shell; sandwiched between these two layers is a wind barrier insert. There is a single face opening which will allow for eye exposure only, while exposure of the total facial area can be achieved by means of an elasticized adjustment feature. Neck protection is accomplished by an extending bib.

E. FOOTWEAR. The ECWCS footwear consists of three items: the cushion sole, wool socks, and the extreme cold weather boots (black and white).

1. Socks, Men's, Nylon, Cushion Sole, Stretch Type, OG-106.

a. Materials Used. The top of the sock is a wool and cotton blend. The cushion heel and foot is a wool, nylon, and cotton blend.

b. Concept of Use. The socks are to be worn with the cold weather boots (black and white).

c. Description of Item. The item is an olive green, knitted, seamless sock.



**Socks, Men's, Nylon Cushion Sole,
Stretch Type, OG-106.**

2. Boots, Cold Weather (Type I-Black).

a. Materials Used. The boots are made of rubber, latex, wool fleece, and nylon tricot.

b. Concept of Use. The boots are to be worn with the ECWCS and provide protection against the environment down to -20°F (-29°C).

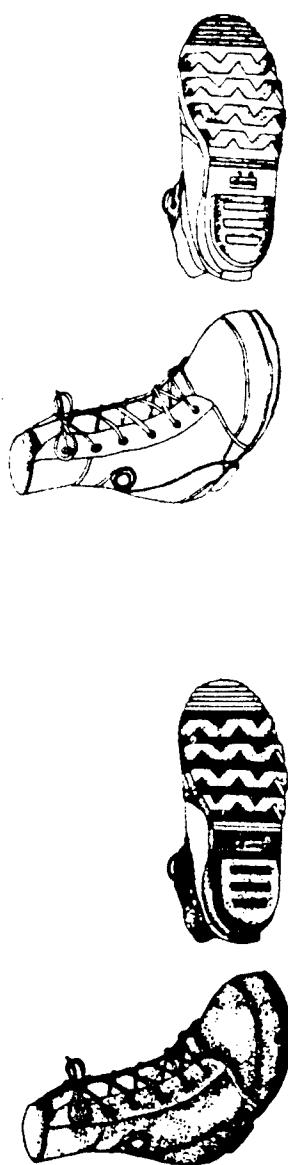
c. Description of Item. The black boot is about 11 inches (29 cm) in height and has six pairs of eyelets. The insulation consists of two layers of wool fleece sealed within an outer and inner layer of rubber.

3. Boots, Extreme Cold Weather (Type II-White).

a. Materials Used. The boots are made of rubber, latex, wool fleece, and nylon tricot.

b. Concept of Use. The boots are to be worn with the ECWCS and provide protection against the environment down to -60°F (-51°C).

c. Description of Item. The white boot is about 11 inches (29 cm) in height and has six pairs of eyelets. The insulation consists of three layers of wool fleece sealed within an outer and inner layer of rubber.



**Boots, Extreme Cold Weather
(Type II-White).**

**Boots, Cold Weather
(Type I-Black).**

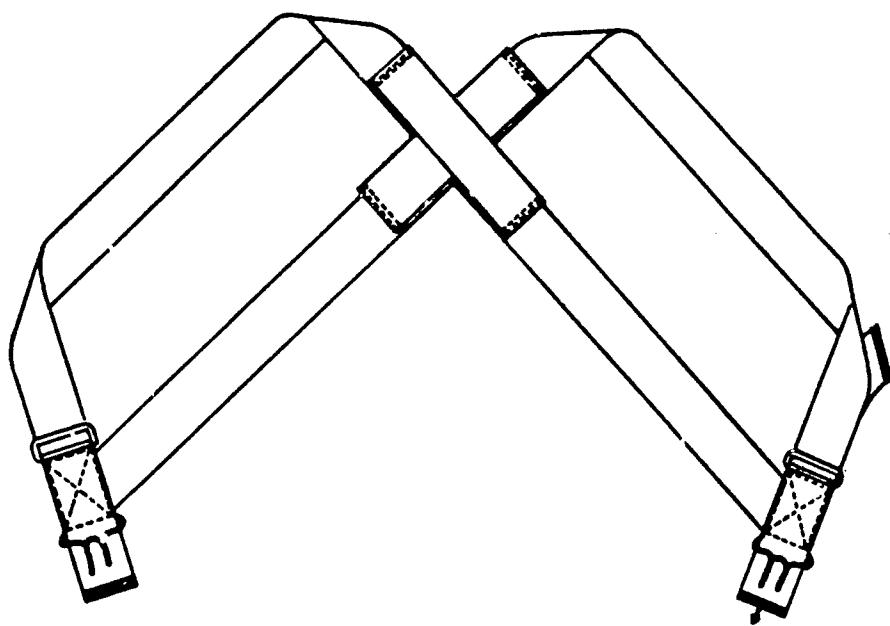
F. ACCESSORIES.

1. Suspenders, Trousers, M-1950.

a. Materials Used. The olive drab shoulder straps and loops are made of cotton elastic webbing. The hook tabs are made of cotton webbing. The slide buckles are made from corrosion-resistant steel or brass. The hooks are made from corrosion-resistant steel or round brass wire. The ferrules (bushings) are formed from stainless steel or brass. The slide buckles, hook, and ferrules have a black chemical finish.

b. Concept of Use. The suspenders are to be used with the trousers, extended cold weather, camouflage.

c. Description of Item. The olive drab suspender straps are scissor-back style (cross over in the back). The suspenders have two slide buckles and two hooks which attach to the trousers.



Suspenders, Trousers, M-1950.

Section III: USE AND CARE OF ECWCS

YOU are responsible for keeping your ECWCS items in good serviceable condition.

This is **YOUR** uniform. It will not continue to look its best unless it is kept clean, maintained in good repair, and stored properly. The ECWCS will protect you only if **YOU** take care of it and wear it properly.

Check the label to see if you have the right size. This is extremely important in order to achieve maximum user satisfaction using the layering principle. Refer to Appendix C, Size Chart, for appropriate size.

ECWCS Is Different

Follow the cleaning and care instructions contained in this chapter and label attached to the garments. Pay particular attention to cleaning instructions for **layers 1 and 4** (polypropylene underwear and parka/trousers, extended cold weather, camouflage) as these items are made of **state-of-the-art materials** and **require added care**. Refer to Chapter 2 of FM 21-15, Care and Use of Individual Clothing and Equipment, for additional general care and maintenance instructions.

A. DONNING AND DOFFING PROCEDURES.

1. Sequence. The ECWCS is an insulating system consisting of the following five primary layers (including the overwhites, when necessary) and accessories:

- Layer 1 - Polypropylene undershirt and drawers.
- Layer 2 - Bib overall, cold weather shirt and trouser liner.
- Layer 3 - Coat liner and field trousers.
- Layer 4 - Extended cold weather camouflage parka and trousers.
- Layer 5 - Snow camouflage parka and trousers (overwhites).
- Accessories - Handwear, headwear, footwear, and suspenders.

Layers 1 through 4 should always be worn. The bib overalls in layer 2 are normally worn for temperatures below -25°F (-32°C). Layer 5 is worn when snow camouflage is required. The white boots should only be worn for temperatures below -20°F (-29°C).

2. Adjustments. The polypropylene underwear has the ability to draw moisture away from the skin and transfer it to the outer layers of the system. Beginning with layer 1, add layers as the temperature drops. Layer 4 is the outer layer of the ECWCS when woodland camouflage is required. Layer 5 is the

outer layer of the ECWCS when snow camouflage is required. **Layer 5 is not a substitute outer garment**, but is worn over layer 4 only as a camouflage. Adjust layers according to preference, metabolism, and weather conditions.

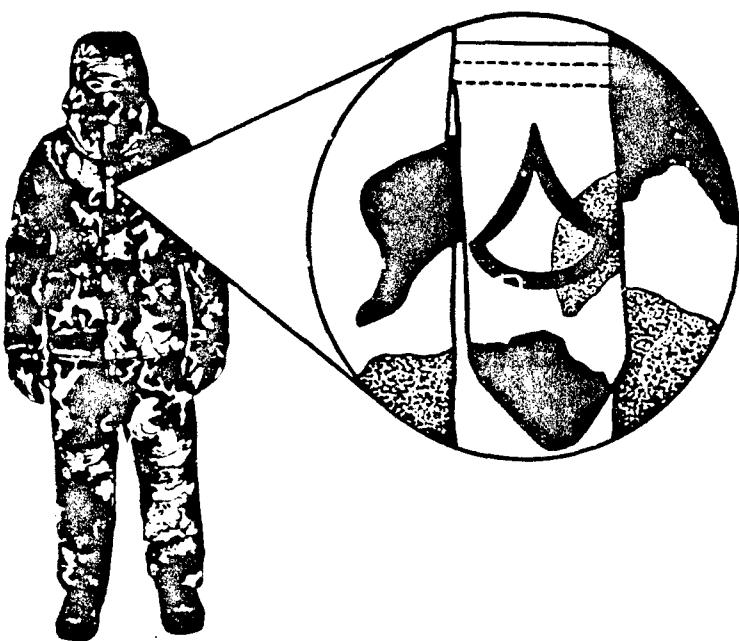
B. INSPECTION. Examine the ECWCS items regularly for tears, punctures, or damage to material.

Punctures on the outer layer will produce leaks and eventually ruin the material if not properly maintained. Repairs should be made as soon as possible.

C. STORAGE. When storing ECWCS clothing:

1. Make sure the clothing is clean.
2. Brush and air-dry clothing before storing so it does not mildew.
 - o Do not fold wet clothing.
 - o Do not place wet clothing in a bag or pack.
3. When packing clothing, make sure it does not come in contact with sharp objects that may cause rips or tears.

D. ATTACHING RANK INSIGNIAS. Attach rank insignia on the parka to the rank tab which is provided at the center of the chest. Either the pin on or sewn on rank insignia may be used. Be careful not to puncture or snag the outer layer of material when attaching rank insignia as punctures will produce leaks.



Rank Tab on Extended
Cold Weather Parka.

E. CLEANING.

1. General. Clean ECWCS clothing items regularly when in use. Dirty clothes wear out quickly because dirt cuts textile fibers and retains moisture from perspiration. Prior to laundering and drying, make sure all the drawcords are tied together, all zippers are zipped, and all snaps and hooks are fastened. Securing these items will result in a better laundered garment.

2. Polypropylene Underwear, Polyester Fiberpile Shirt and Bib Overall.

a. Machine/Hand Laundering. Use delicate or gentle fabric wash cycle or by hand, using cold water (up to 85°F/29°C) and cold water laundry detergent. Rinse in clean cold water. **NOTE: DO NOT USE BLEACH OR STARCH.**

b. Drying. Tumble dry at lowest fabric cycle, delicate/gentle (do not exceed 90°F/32°C). Remove immediately at end of drying. **AVOID OVERDRYING.** To drip dry, remove water and place on rust-proof hanger. **NOTE: DO NOT PRESS.**

3. Liners, Coat and Trousers.

a. Machine/Hand Laundering. After removing liner from coat or trousers, wash by machine or by hand in warm water with mild soap or detergent. Rinse thoroughly in clean warm water.

b. Drying. Drip dry or machine dry on low heat setting as fabric may melt if contacted with heated surface. Remove immediately from dryer.
NOTE: DO NOT DRY CLEAN.

4. Trousers, Cold Weather, Field.

a. Machine/Hand Laundering. By machine, use permanent press cycle. By hand, **do not wring or twist**. Wash in warm water using mild detergent. Rinse thoroughly in clean warm water. **NOTE: DO NOT USE BLEACH OR STARCH.**

b. Drying. Tumble dry at low heat setting. **DO NOT EXCEED 130°F/54°C**. Remove immediately from dryer. To drip dry, remove from water and place on a rust-proof hanger.

5. Parka/Trousers, Extended Cold Weather, Camouflage.

a. Machine/Hand Laundering. Use wash and wear/permanent press fabric cycle or by hand, using warm water (90°F/32°C - 110°F/43°C) and mild powder detergent. Rinse thoroughly in clean warm water. **NOTE: DO NOT USE BLEACH OR STARCH.**

b. Drying. Tumble dry at low temperature (100°F/38°C) and **REMOVE IMMEDIATELY** from dryer. **AVOID OVER-DRYING**. To drip dry, remove from water and place on a rust-proof hanger. **NOTE: DO NOT PRESS.**

6. Parka/Trousers, Snow Camouflage.

a. These items are intended for wear as an outer garment to provide camouflage in snow areas. If garment becomes soiled or stained, it is extremely important that the items are cleaned immediately.

b. Spot clean and rinse as required. For thorough cleaning and restoring of water repellency, return to laundry unit for machine washing in accordance with established procedures.

7. Handwear.

a. Gloves, Insert, Cold Weather. Remove, separate, and dry the inserts as required. Dry items away from flames or extreme heat.

b. Gloves, Men's and Women's Light Duty. The gloves are made of full leather and contain a water resistant compound. **DO NOT EXPOSE GLOVES TO SOAPS, DETERGENTS, OR WETTING AGENTS.** To clean gloves, wipe dirt off with a dry cloth.

c. Mitten Inserts and Shells. Remove inserts from shells. Lay items out flat to dry. Keep items away from flames or extreme heat.

d. Mitten Set. Separate liner from shell and dry away from direct heat.

8. Headwear (Hood (Balaclava) and Cap, Camouflage Pattern).

a. Machine/Hand Laundering. By machine or hand, wash in warm water using mild detergent. Rinse in clean, warm water.

b. Drying. Hang items to drip dry at room temperature. **NOTE: DO NOT DRY CLEAN.**

9. Footwear.

a. **CAUTION:** Do not apply any oil-based paint or solvent-based polish to any part of the boot since paint or polish will cause the rubber to deteriorate.

b. Clean the boots by washing the outside with a mild detergent and rinsing with water.

10. Accessories.

a. Suspenders, Trousers, M-1950. Clean the suspenders by hand washing the shoulder straps and loops with a mild detergent and rinsing with clean, warm water. Hang suspenders to drip dry at room temperature.

F. STAIN/SPOT REMOVAL.

1. Following instructions on container, use a pre-wash or spot remover directly on the stain or spot followed by a standard laundry cycle with powdered detergent. **NOTE: DO NOT DRY CLEAN.**

2. Refer to Chapter 2 and Appendix D of FM 21-15, Care and Use of Individual Clothing and Equipment, for additional instructions on stain/spot removal.

G. WATER REPELLENCY. If the fourth layer (Parka/Trousers, Extended Cold Weather, Camouflage) of ECWCS leaks and inspection has revealed no rips or tears, wash garments in mild **powdered** detergent. Detergents used in cleaning affect water repellent qualities. **DO NOT WASH GARMENTS IN LIQUID DETERGENT.** When liquid detergents are used, they leave a chemical residue which actually reduces the waterproof properties of the fabric.

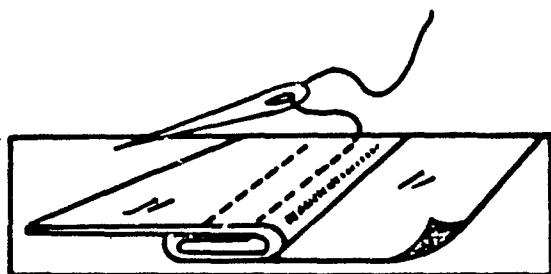
To restore the water repellency of Parka/Trousers, Extended Cold Weather, Woodland Camouflage, occasionally steam garments with iron on steam setting being careful to hold the iron about 1/2 inch above garment. **NOTE: DO NOT PRESS.**

Section IV: REPAIR OF ECWCS

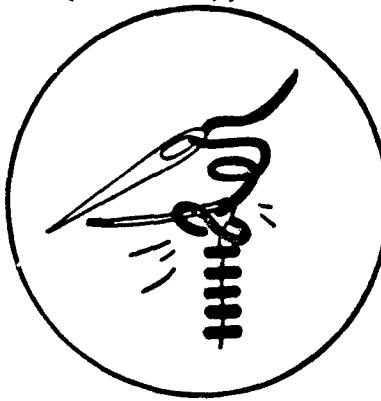
A. RIPS AND TEARS

1. Underwear, Bib Overall, Polyester Shirt, Liners (Coat and Trousers), Parka/Trousers (Snow Camouflage), Balaclava, and Cap, Camouflage.

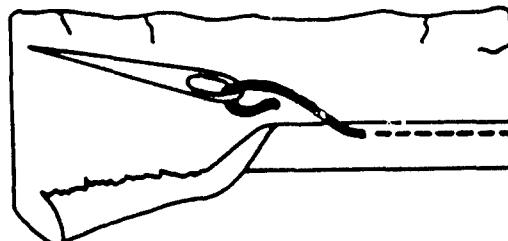
a. To mend a ripped seam, overlap the two edges and sew with straight and small stitches.



b. To repair a tear, place the two edges on the wrong side (or inside), and sew together.



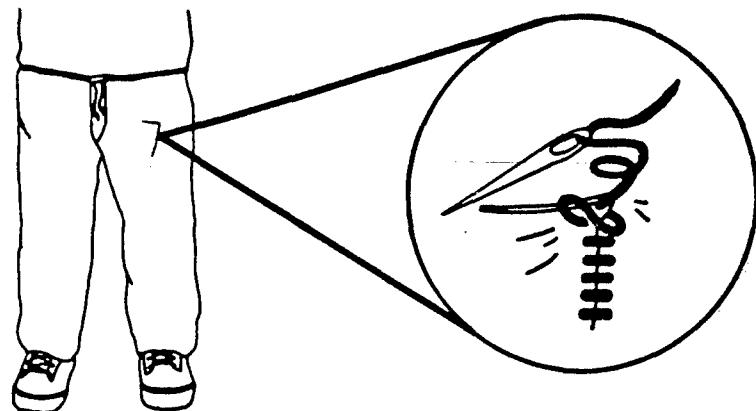
c. To mend a frayed edge, turn the frayed edge under and sew.



2. Parka/Trousers, Extended Cold Weather, Camouflage.

a. Field expedient or temporary measures.

(1) Stitch. Loosely whipstitch the rip or tear, keeping the seam as flat as possible. Trim all thread ends.



(2) Field tape. Turn the garment inside out, keeping the rip or tear as flat as possible. Cut the appropriate size of tape to cover the rip or tear. Round the edges of the tape to reduce fraying. Place the tape over the rip or tear and press firmly.

b. Permanent repairs. More permanent repair measures involve a seam tape patch and a cross-over sealer. Refer to TM 10-8400-201-23 for additional repair procedures involving the cross-over sealer.

3. All other items of ECWCS are considered non-repairable and should be turned in when unserviceable.

B. DRAWCORDS.

1. Drawcords are found on the following garments:

ITEM	TYPE OF DRAWCORD
Hem of Fiberpile Shirt	Elastic
Hood of Parka, Extended Cold Weather, Woodland Camouflage	Tape with barrel locks
Hem of Parka, Extended Cold Weather, Camouflage	Elastic w/ barrel locks

ITEM	TYPE OF DRAWCORD
Waist of Parka, Extended Cold Weather, Camouflage	Elastic
Waist of Trousers, Extended Cold Weather	Elastic with barrel locks

2. Replace missing or defective elastic drawcords in lengths to match original. If barrel lock is broken, tie ends of drawcords into large knots until a new elastic or tape drawcord with barrel locks can be obtained from the organizational supply unit.

C. ZIPPERS. If the zipper works stiffly, rub a thin coating of wax or lead-pencil graphite on each side of the track and work zipper back and forth a few times. The wax or graphite lubricates the zipper and allows it to open and close more easily.

D. MAINTENANCE TURN IN. Turn in clothing to supply points for exchange when:

1. Ripped or torn beyond immediate repair.
2. Any snap fastener, zipper, or hook and pile fastener tape is torn, damaged, or will not hold.
3. Elastic webbing is torn or frayed beyond immediate repair.
4. Clothing is so badly soiled that it cannot be cleaned adequately.
5. Closures or snaps do not function properly.

Appendix A. Descriptive Data for the ECWCS

Layer¹	ECWCS Item	Available Sizes²	Temperature Ranges
1	Undershirt, cold weather, polypropylene	XS thru XL	+40°F to -60°F +4°C to -51°C
1	Drawers, cold weather, polypropylene	XS thru XL	+40°F to -60°F +4°C to -51°C
2	Shirt, cold weather, polyester fiberpile	XS thru XL	+40°F to -60°F +4°C to -51°C
2	Overall, bib, cold weather, fiberpile	XS thru XL in short, reg. and long lengths	-26°F to -60°F -32°C to -51°C
2	Liner, cold weather trousers, field	XS thru XL in short, reg. and long lengths	+40°F to -60°F +4°C to -51°C

¹ First layer to be put on is 1, second layer to be put on is 2, and so forth.

² XS is extra small, S is small, M is medium, L is large, and XL is extra large.
Reg. is regular length.

Appendix A. Descriptive Data for the ECWCS (Continued)

<u>Layer 1</u>	<u>ECWCS Item</u>	<u>Available Sizes 2</u>	<u>Temperature Ranges</u>
3	Liner, cold weather, coat, men's	XS thru XL	+40° F to -60° F +4° C to -51° C
3	Trousers, cold weather, field, nylon and cotton	XS thru XL in short, reg. and long lengths	+40° F to -60° F +4° C to -51° C
4	Parka, extended cold weather, camouflage	XS thru XL	+40° F to -60° F +4° C to -51° C

Appendix A. Descriptive Data for the ECWCS (Continued)

Layer¹	ECWCS Item	Available Sizes²	Temperature Ranges
4	Trousers, extended cold weather, camouflage	XS (X-short thru regular lengths) and S thru XL (X-short thru long lengths)	+40° F to -60° F +4° C to -51° C
50	53 Parka/Trousers, snow camouflage, white	XS thru XL	+40° F to -60° F +4° C to -51° C
	Hand-wear	1 thru 5	+40° F to -20° F +4° C to -29° C
	Hand-wear	1 thru 5	+40° C to -20° F +4° C to -29° C

³ Items are intended for camouflage use only and are not a substitute for outer garment.

Appendix A. Descriptive Data for the ECWCS (Continued)

Layer¹	ECWCS Item	Available Sizes²	Temperature Ranges
Hand-wear	Mitten inserts, cold weather, (trigger finger)	M & L	+40° F to -60° F +4° C to -51° C
Hand-wear	Mitten shells, cold weather (trigger finger)	M & L	+40° F to -60° F +4° C to -51° C
Hand-wear	Mitten set, extreme cold weather	S, M, & L	+40° F to -60° F +4° C to -51° C
Hand-wear	Mitten shells, snow camouflage, cotton, white, two finger	One size	+40° F to -60° F +4° C to -51° C
Head-wear	Cap, camouflage pattern	6-1/8 thru 7-3/4 in 1/8 increments	+40° F to -60° F +4° C to -51° C

Appendix A. Descriptive Data for the ECWCS (Continued)

Layer¹	ECWCS Item	Available Sizes²	Temperature Ranges
Head- wear	Hood (Balaclava)	One size	+40° F to -60° F +4° C to -51° C
Foot- wear 52	Socks, men's, nylon, cushion sole, stretch type	XXS thru XL	+40° F to -60° F +4° C to -51° C
Foot- wear	Boots, cold weather (Type I-Black)	3 thru 14, five widths	+40° F to -20° F +4° C to -29° C
Foot- wear	Boots, extreme cold weather (Type II-White)	3 thru 14, five widths	-20° F to -60° F -29° C to -51° C
Access- ories	Susper. Jers, Trousers, M-1950	One size	+40° F to -60° F +4° C to -51° C

Appendix B. References

FM 21-15, Care and Use of Individual Clothing and Equipment

TM 10-8400-201-23, General Repair Procedures for Clothing and Individual Equipment, Organizational and Direct Support Maintenance Manual

Appendix C. Size Chart

<u>Size¹</u>	<u>Chest, In/Cm</u>	<u>Height, In/Cm</u>	<u>Waist, In/Cm</u>	<u>Inseam, In/Cm</u>
XS Short	Under 33/84	Under 67/170	Under 27/69	Under 29½/75
XS Reg.	Under 33/84	67-71/170-180	Under 27/69	29½-32½/75-83
S Short	33-37/84-94	Under 67/170	27-31/69-79	Under 29½/75
S Reg.	33-37/84-94	67-71/170-180	27-31/69-79	29½-32½/75-83
S Long	33-37/84-94	Over 71/180	27-31/69-79	Over 32½/83
M Short	37-41/94-104	Under 67/170	31-35/79-89	Under 29½/75
M Reg.	37-41/94-104	67-71/170-180	31-35/79-89	29½-32½/75-83
M Long	37-41/94-104	Over 71/180	31-35/79-89	Over 32½/83
L Short	41-45/104-114	Under 67/170	35-39/89-99	Under 29½/75
L Reg.	41-45/104-114	67-71/170-180	35-39/89-99	29½-32½/75-83
L Long	41-45/104-114	Over 71/180	35-39/89-99	Over 32½/83
XL Short	Over 45/114	Under 67/170	Over 39/99	Under 29½/75
XL Reg.	Over 45/114	67-71/170-180	Over 39/99	29½-32½/75-83
XL Long	Over 45/114	Over 71/180	Over 39/99	Over 32½/83

¹ XS is extra small, S is small, M is medium, L is large, XL is extra large, and Reg. is regular length.